

WHAT IS CLAIMED IS:

1. A double-wrap band brake assembly to be used for braking a rotating member fitted in a double-wrap brake band, which double-wrap brake band comprising:

5        an annular middle band with a friction surface formed on the inner periphery thereof;

         a pair of annular outer bands which are coupled to the middle band in a state that the respective free ends thereof are opposed to the free end of the  
10       middle band, and which respectively have friction surfaces on the inner peripheries;

         an anchor bracket secured to the working end of either one of the middle band and the outer bands and latched to the main body casing; and

15       an apply bracket secured to the working end of the other of the middle band and the outer bands for receiving a force in the direction of constriction of the middle band and the outer bands from an actuator,

         wherein at least one of the middle band and the  
20       outer bands is provided with a first friction surface which is brought into sliding contact with the rotating member with a first dynamic friction coefficient at the beginning of the braking and a second friction surface which is brought into sliding  
25       contact with the rotating member with a second dynamic friction coefficient larger than the first dynamic friction coefficient at the beginning of the

braking.

2. A double-wrap band brake assembly according to Claim 1, wherein the first friction surface is  
5 formed on the apply bracket side and the second friction surface is formed in the vicinity of a position at which the middle band is coupled to the outer bands.

10 3. A double-wrap band brake assembly according to Claim 1, wherein the frictional materials are attached to both the first and second friction surfaces and the dynamic friction coefficient between the frictional material attached to the second  
15 friction surface and the rotating member is larger than the dynamic friction coefficient between the frictional material attached to the first friction surface and the rotating member.

20 4. A double-wrap band brake assembly according to Claim 2, wherein the frictional materials are attached to both the first and second friction surfaces and the dynamic friction coefficient between the frictional material attached to the second  
25 friction surface and the rotating member is larger than the dynamic friction coefficient between the frictional material attached to the first friction

surface and the rotating member.

5           5. A double-wrap band brake assembly according to Claim 1, wherein the double-wrap brake band is lubricated with liquid and a liquid film of this liquid is formed between the first friction surface and the rotating member at the beginning of the braking.

10           6. A double-wrap band brake assembly according to Claim 5, wherein the liquid film is removed from between the second friction surface and the rotating member at the beginning of the braking.

15           7. A double-wrap band brake assembly according to Claim 5, wherein a frictional material which is gradually thicker along the direction of rotation of the rotating member is attached to the first friction surface in order to form the liquid film.

20           8. A double-wrap band brake assembly according to Claim 6, wherein a frictional material which is gradually thicker along the direction of rotation of the rotating member is attached to the first friction surface in order to form the liquid film.

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9. A double-wrap band brake assembly according

to Claim 7, wherein the first frictional material has an angle of  $0.01^{\circ}$  to  $30^{\circ}$  with respect to the double-wrap brake band as seen from a side thereof in a state that the double-wrap brake band is developed in a planar manner.

10. A double-wrap band brake assembly according to Claim 5, wherein, in order to form the liquid film, the frictional material for forming the first friction is set to be thinner than the frictional material for forming the second friction surface.

11. A double-wrap band brake assembly according to Claim 6, wherein, in order to form the liquid film, the frictional material for forming the first friction is set to be thinner than the frictional material for forming the second friction surface.

12. A double-wrap band brake assembly according to Claim 6, wherein the liquid film is removed by a corner portion of the end surface of the second frictional material facing an axial groove formed on the double-wrap brake band.

13. A double-wrap band brake assembly according to Claim 12, wherein the angle of the corner portion of the end surface is set to be  $10^{\circ}$  to  $90^{\circ}$  with

respect to the double-wrap brake band as seen from a side thereof in a state that the double-wrap brake band is developed in a planer manner.

5           14. A double-wrap band brake assembly according to Claim 10, wherein a slanting portion is formed on the second friction surface in order to avoid a step between the second friction surface and the first friction surface.

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          15. A double-wrap band brake assembly according to Claim 12, wherein a slanting portion is formed on the second friction surface in order to avoid a step between the second friction surface and the first friction surface.

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          16. A double-wrap band brake assembly according to Claim 13, wherein a slanting portion is formed on the second friction surface in order to avoid a step between the second friction surface and the first friction surface.

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          17. A double-wrap band brake assembly according to Claim 6, wherein the removal of the liquid film is performed on the second friction surface which is sandwiched by and between a pair of grooves formed in the axial direction.

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18. A double-wrap band brake assembly according to Claim 7, wherein the removal of the liquid film is performed on the second friction surface which is  
5 sandwiched by and between a pair of grooves formed in the axial direction.

19. A double-wrap band brake assembly according to Claim 9, wherein the removal of the liquid film is  
10 performed on the second friction surface which is sandwiched by and between a pair of grooves formed in the axial direction.

20. A double-wrap band brake assembly according to Claim 10, wherein the removal of the liquid film  
15 is performed on the second friction surface which is sandwiched by and between a pair of grooves formed in the axial direction.

20 21. A double-wrap band brake assembly according to Claim 12, wherein the removal of the liquid film is performed on the second friction surface which is sandwiched by and between a pair of grooves formed in the axial direction.

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22. A double-wrap band brake assembly according to Claim 13, wherein the removal of the liquid film

is performed on the second friction surface which is sandwiched by and between a pair of grooves formed in the axial direction.

5           23. A double-wrap band brake assembly according to Claim 14, wherein the removal of the liquid film is performed on the second friction surface which is sandwiched by and between a pair of grooves formed in the axial direction.

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          24. A double-wrap band brake assembly according to Claim 17, wherein one of the paired grooves which is used for removing the liquid film is disposed in the vicinity of a position at which the middle band is coupled to the outer bands.

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          25. A double-wrap band brake assembly according to Claim 24, wherein the groove used for removing the liquid film is disposed on the middle band and is conductively connected to the outer bands.

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          26. A double-wrap band brake assembly according to Claim 6, wherein the removal of the liquid film produces a liquid reservoir on the second friction surface.

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          27. A double-wrap band brake assembly according

to Claim 7, wherein the removal of the liquid film produces a liquid reservoir on the second friction surface.

5           28. A double-wrap band brake assembly according to Claim 9, wherein the removal of the liquid film produces a liquid reservoir on the second friction surface.

10           29. A double-wrap band brake assembly according to Claim 10, wherein the removal of the liquid film produces a liquid reservoir on the second friction surface.

15           30. A double-wrap band brake assembly according to Claim 12, wherein the removal of the liquid film produces a liquid reservoir on the second friction surface.

20           31. A double-wrap band brake assembly according to Claim 13, wherein the removal of the liquid film produces a liquid reservoir on the second friction surface.

25           32. A double-wrap band brake assembly according to Claim 14, wherein the removal of the liquid film produces a liquid reservoir on the second friction



surface.

33. A double-wrap band brake assembly according  
to Claim 26, wherein the liquid reservoir is disposed  
5 in the vicinity of a position at which the middle  
band is coupled to the outer bands.

34. A double-wrap band brake assembly according  
to Claim 33, wherein the groove used for removing the  
10 liquid film is disposed on the middle band.